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AUTHOR(S):

Wiadnyana, Ngurah N.

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Study on population and distribution of two common sea turtles, green turtle and hawksbil turtle in Indonesia

NGURAH N. WIADNYANA

Research Center for Capture Fisheries, Agency for Marine and Fisheries Research
Ministry of Marine Affairs and Fisheries

Jl. Pasir Putih I, Ancol Timur Jakarta 14430 Indonesia. Email: purispt@indosat.net.id

ABSTRACT

The green turtle and hawksbill turtle are the most common of six sea turtle species existing in Indonesian waters. These two populations seem to be declined after observation of the decreases of nested sea turtles from year to year in some place where the turtles had been nesting frequently. This is caused by the habitat degradation and the un-stopped mortality due to the incidental capture and hunting by fishermen.

KEYWORDS: population, distribution, nesting, green turtle, hawksbill turtle

INTRODUCTION

Sea turtles are long-lived species that mature late in life and move great distances during their lifetimes. As trans-boundary species, sea turtles are excellent navigators, frequently migrating hundreds or even thousands of kilometres between foraging and nesting grounds, crossing international boundaries. They spend their lives at sea but return to land to produce. Adult females nest in multiyear cycles, coming ashore several times to lay hundreds of eggs during nesting season. After about 50 to 60 days of incubation, the hatchlings emerge and head for the ocean to begin life as pelagic drifters. While maturing over the course of several decades, they move in and out of a variety of ocean and coastal habitats.

Indonesia is an archipelago country of approximately 17,500 islands and 81,000 km of total coastlines, each with different geographical and topographically. This nature benefits turtles in their wide range of choice of habitats. Of seven species of marine turtles in the world, there are 6 species, which have been identified to live and spread in Indonesian marine waters such as leatherback turtle (*Dermochelys coriacea*), olive ridley turtle (*Lepidochelys olivacea*), hawksbill turtle (*Eretmochelys imbricata*), loggerhead turtle (*Caretta caretta*), flatback turtle (*Natator depressus*), and green turtle (*Chelonia mydas*). Whereas *Lepidochelys kempi* is not found in Indonesian waters as this species only live in Atlantic Ocean around Mexico and American beaches. Consecutively, the most abundant species in Indonesia are the green turtle and hawksbill. The green turtles are suffered to the capture by fishermen, which bring them to the specific area (Bali) for the purpose of religious and culture. However, their population status and distribution are little known. This condition stimulated

us to develop a study on this topic, for that this paper presented for the first step.

MATERIALS AND METHODS

Data presented in this paper were summarized from technical reports of some research activities that were conducted in some areas (Fig. 1), such as: Pangumbahan Beach (West Java), Alas Purwo National Park and Meru Betiri (East Java), Berau District (East Kalimantan), and Jamursba Medi Beach (Papua). The data that was analyzed from 1980 to 2000 included nesting sites, nesting season, and mortality.

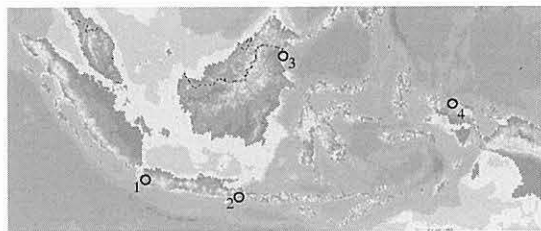


Fig. 1. Map showing the study sites: 1- Pangumbahan ; 2-Alas Purwo NP and Meru Betiri; 3-Berau District; 4- Jamursba Medi Beach.

RESULTS AND DISCUSSION

Green turtle

The green turtle with local name Penyu Hijau, Penyu Daging and Penyu Laut has traditional been utilized by coastal communities for centuries, particularly as a part of the Balinese culture. This turtle is commonly found and widely distributed throughout the Indonesian archipelagos and can be found to nest in a quite vast amount such as in

Berau district of East Kalimantan province; and in small and remote islands throughout Indonesia. In Berau district, this population has been long contributed economically both to the local community and the government. There are about 8 nesting sites for green turtle species throughout Berau district such as in Derawan, Sangalaki, Semana, Mataha, Belambangan, Bilang-bilangan, Balikukup and Sambit islands (Table 1). Sometimes Kakaban island which is located in southern part of Sangalaki island has also been used by the green turtle populations for laying their eggs even though the nests often have become inundated or covered by the high tide so that the embryos down inside the nests. Since January 2002, the local government of Berau District has stopped the concession activity and declared the Sangalaki Island and Derawan Island as protected important nesting site.

Table 1. Number of nests on the five concession Islands in Berau District between 1998 and 2000 (Turtle, Foundation, WWF and KEHATI 2002).

Islands	Number of Nests		
	1998	1999	2000
Sangalaki	6985	10346	5065
Belambangan	2602	3819	2314
Sambit	482	1050	430
BilangBilangan	4483	7847	3935
Mataha	2746	4058	2334
Total	17298	27120	14078

Pangumbahan in West Java is also one of the major green turtle nesting beach in Indonesia and the only remaining nesting beach of any importance on Java. However, the number of many largest rookeries has decreased in the last 50 years, due to over-harvest (Schulz 1984, Salm, 1984; Kitchener, 1996). As shown in the Figure 2, the green turtles nested in Pangumbahan with different peaks from year to year. There was a significant decrease of eggs laid from 1997 to 1998. This is due to the habitat degradation and indicates the decrease of green turtle populations. Green turtles were captured in several waters of Indonesia. Green turtles were captured accidentally by the fish net in Arafura Sea with values reaching 95 individual in 1999. Almost no turtles captured after utilization of Turtle Excluder Device (TED) since 2001. Although this species has been protected based on the Governmental Law No. 7/1999, the captures of sea turtles were happened illegally in some areas by using drift gillnet. There are no significant data available to estimate the number of population of the green turtle existing in Indonesian waters.

Hawksbill

There are several local names for hawksbill: Penyu Sisik, Fonu Koloa, Penyu Genteng, Penyu Kembang, Penyu

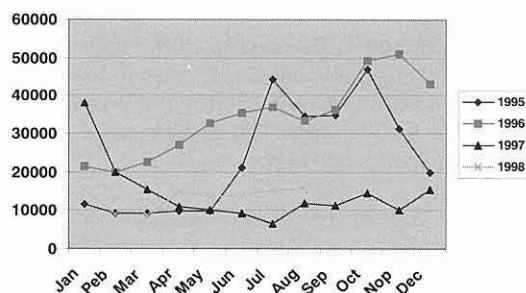


Fig. 2 Monthly fluctuation of green turtle eggs at Pangumbahan beach, West Java.

Katungker and Wau. This species has been protected based on Ministerial of Forestry decree no. 882/Kpts-II/1992 that is more strongly based on the Governmental Law No. 7/1999. At present hawksbill can still be found throughout Indonesia in significant number as reported by Halim and Dermawan (1999). Important nesting areas are the many islands in the Anambas and Natuna-Riau; Lima Momperang, Pesemut-Belitung, Segamat Island-Lampung, South of Ujung Pandang, Birah-birahan, Derawan-East Kalimantan (Salm and Halim, 1984; Schulz, 1984; Soehartono, 1993; Halim and Dermawan, 1999). The hawksbill turtle is exceedingly difficult to monitor for long-term trend, for a number of reasons. First, all small number of animal's nest on wide variety of beaches across abroad geographic area. Secondly, hawksbill beaches tend to be remote, inaccessible and sometime so narrow that the turtle leaves no crawl trace. Finally, hawksbill also exhibits the large annual fluctuation in nesting counts characteristic of green turtles. The figure 3 shows the hawksbill nested in small quantity in three different locations such as, Alas Purwo National Park-East Java; Jamursba-Medi Beach-Papua; Sukamade beach, and Meru Betiri-East Java.

In some rookeries the nesting time of this species varied seasonally, for instance in Kepulauan Seribu NP it is on December-April, Segamat Island-Lampung on December-April, Belitung on January-June, Paloh-West Kalimantan on February-May and Tambelan, Riau on February-May.

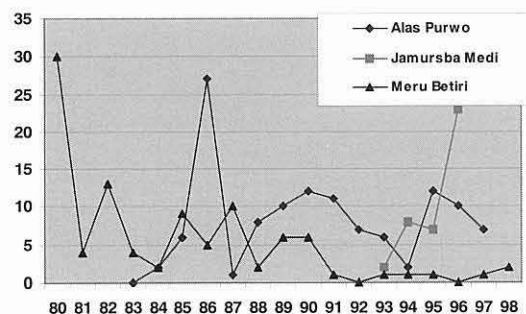


Fig. 3. Annual nesting trend of hawksbill turtles in 3 different places in Indonesia

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